

"Forder" Pratt Through Truss Bridge
Spanning Maumee River at County Route 73
Antwerp vicinity
Paulding County
Ohio

HAER No. OH-42

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

"Forder" Pratt Through Truss Bridge

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Location: 4 miles northeast of Antwerp, County Route 73 over
Maumee River, Crane Township, Paulding County, Ohio

UTM Coordinates: 16/695340/4565840

Date of
Construction: 1889

Present Owner: County of Paulding
Board of Commissioners
Paulding County Courthouse
Paulding, Ohio

Present Use: Vehicular traffic

Significance: The Forder Bridge is a "textbook" example of a
typical, prefabricated metal-truss that represents
the transition from bridges made of wrought-iron to
steel between 1889 to 1893. It is the oldest
all-steel Pratt truss in Ohio.

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Metal truss bridges became increasingly popular in the United States after 1880. Among metal truss types, the Pratt truss appealed to many bridge builders, and, in Ohio, its popularity is readily manifested by county records and the number of Pratt trusses still extant. The Forder Bridge is an example of a Pratt through truss and is one of the first Pratt through trusses in Ohio built with steel instead of iron.¹

As with other Pratt trusses, the diagonals and bottom chord are in tension, and the verticals and top chord are in compression. The bridge consists of two spans of eleven panels, each measuring 16.2 feet.² The pier and abutments are stone.

The bridge has an overall length of 356 feet. The roadway has a total width of 16 feet, and the deck rests 28 feet above the stream, carried by ten 24 inch built-up floor beams.³ The height of the bridge is 24 feet from the lower chord to the upper chord. Each portal has a height clearance of 16.3 feet in the center and 12.5 feet at the sides.⁴

In addition, this bridge retains many decorative elements. Vase-shaped finials top the inclined end-posts, and decorative iron crestings enhance the portal openings. Decorative plates at each portal identify the builder.

The Paulding County Board of Commissioners decided on March 20, 1889 to build Forder Bridge over Maumee River at the border of sections 17 and 18 in Crane Township. This bridge was a major undertaking for the county government, and extraordinary financing was needed to build the relatively expensive bridge at an important crossing of a major river. The commissioners found it necessary to sell \$16,000 worth of bonds to finance the bridge.⁵

Despite the vital political role of the board of commissioners in contracting to build the bridge, the major government duty concerning the bridge rested with the county surveyor. In Ohio, the county surveyor provided guidance to the commissioners in reviewing proposals for bridge plans. Often, he provided bridge plans prepared by engineers in his own office. The surveyor gave overall supervision of bridge construction, guaranteeing that the wishes of the county officials were followed by the contractors. He held the responsibility to maintain and repair all county bridges and to supervise maintenance and repair work.

The office of county surveyor originated with an act of the Ohio General Assembly in 1903. The court of common pleas originally appointed the county surveyor, but the office became elective in 1931. Elected for a three-year term, the surveyor dealt with the survey of all lands which

were sold for taxes or were scheduled to be sold for taxes. He employed chainmen to establish boundaries. The county surveyor also reported trespassing on public lands, transcribed maps and plats, and eventually, performed many of the same services as a justice of the peace.

By 1889, when the Forder Bridge was built, the surveyors had assumed duties involving roads, bridges, and culverts more than land, and many county surveyors employed professional engineers. In 1906, state legislation formalized the responsibilities for bridges, roads, culverts, and ditches that a number of surveyors had already assumed. In 1919, the state legislature granted the surveyor the authority to designate a deputy as a maintenance engineer. A 1935 legislative act changed the name of the office to "county engineer," requiring the officer to be a registered professional engineer and registered surveyor, and set the term of office at four years.⁶

The county surveyor of Paulding County reviewed the work of the contractors on the Forder Bridge in 1889. George Forder, a local property owner after whom the bridge was named, received the contract for the masonry work on the bridge. However, the superstructure work required a contractor which could accomplish a large-scale project in a short time and produce a durable bridge at this important river

crossing. Thus, the county commissioners awarded the contract to Milwaukee Bridge and Iron Works. Although the company was an out-of-state firm, it enjoyed a long history of bridge building in northwestern Ohio in the late-nineteenth-and-early-twentieth centuries.⁷

Despite its long record of iron and steel bridge building in Ohio, Milwaukee Bridge and Iron Works left a more prominent mark in Ohio history for its role in bridge company pools or trusts. More specifically, an Ohio agent of the company, John J. Dun, brought Milwaukee Bridge and Iron Works to full public attention in 1905 when he testified against his employer and other bridge companies in the case of the State of Ohio ex rel. Kora F. Brigs vs. Henry Hughes et al. In this lawsuit, Sandusky County alleged that a number of bridge companies had cooperated to artificially raise bridge construction costs in order to boost profits at the expense of county taxpayers. Dun testified that while he was an agent of J. G. Wagner Company, an alias of Milwaukee Bridge, in 1898 and 1899, the company built no bridges in Ohio but received \$6,339.60 as the result of an agreement with other companies. That agreement provided that Milwaukee Bridge refrain from bidding or competing for bridge contracts in exchange for a share of the profits from companies that received contracts. Contractors artificially

increased bridge prices in order to provide for enough profits to share with bridge pool members. Dun charged that bridge contractors pushed bridge prices 50% over actual construction costs and gave one-half of the resulting profits to a Cleveland based trust. Other trust members received dividends from the profits. Dun alleged that agents of pool members secretly met when governments advertised bridge contracts and decided which companies submitted bids, which received contracts, and what the bridge price would be. He named the prolific Columbus Bridge Company, Mt. Vernon Bridge Company, King Iron Bridge & Manufacturing Company, Wrought Iron Bridge Company, Canton Bridge Company, Toledo Bridge Company, Massillon Bridge Company, Pittsburgh Bridge Company, Penn Bridge Company, Brackett Bridge Company, Champion Bridge Company, Bellefontaine Bridge Company, Horseheads Bridge Company, Havana Bridge Company, Variety Iron Works, Iron Substructure Company, J. G. Wagner Bridge Company, Youngstown Bridge Company, and Oregonia Bridge Company as members of the clandestine bridge trust.⁸

The concept of bridge pools developed during the 1870s. Suffering from the economic depression of the decade, bridge companies copied railroads and banded together to promote and protect their mutual interests. In order to increase profits and bolster business, pool members ran "specials" to undercut the prices charged by non-members; they agreed to

split profits from projects which were deferred to them by other pool members; the pool members added "service fees" and "handling costs" in order to assure greater profits. Pool members who received contracts divided profits with other companies according to either a fixed amount per square foot on the contracted bridges or according to predetermined percentage shares of the sales prices of the bridges. In his doctoral dissertation about Chicago Bridge & Iron Company, Eli Woodruff Imberman wrote that a ledger of Chicago Bridge listed Brackett Bridge Company, Canton Bridge Company, Columbus Bridge Company, King Iron Bridge & Manufacturing Company, Lane Brothers, Massillon Bridge Company, Milwaukee Bridge & Iron Works, Morse Bridge Company, Penn Bridge Company, Pittsburgh Bridge Company, Wrought Iron Bridge Company, Smith Bridge Company, Toledo Bridge Company, Variety Bridge Company, Youngstown Bridge Company, and Queen City Bridge Company among early bridge pool members.⁹

Milwaukee Bridge and Iron Works played a leadership role in the earliest Ohio-oriented bridge pool. Sixteen companies organized the pool, known as the "Clearing House," in 1884 and agreed to pay 13% of the gross amount on all contracts into a general pool fund. Milwaukee Bridge acted under the name, Keepers & Riddell, and W. H. Keepers served on the executive committee of the "Clearing House." H. G. Morse of Morse

Bridge Company, Z. King of King Iron Bridge & Manufacturing Company, and A. J. Sprague of Massillon Bridge Company also served on the executive committee as representatives of the companies that received the highest dividends from the pool fund. Other members of the Ohio bridge trust included Missouri Valley Bridge and Iron Works, Wrought Iron Bridge Company, Smith Bridge Company, Kansas City Bridge and Iron Company, Berlin Bridge Company, Columbia Bridge Company, Penn Bridge Works, Horace E. Horton, Raymond & Campbell, Mt. Vernon Bridge Company, Champion Bridge Company, Lomas Forge and Bridge Works, and Indianapolis Bridge Company.¹⁰

The bridge companies began pooling practices as an attempt at economic survival during a competitive era. However, the pools became excessive and unethical in their practices, and Ohioans became alarmed. A number of taxpayers and county governments filed civil suits in the early years of the 1900s in efforts to recover public money that many people felt the bridge companies had cheated the counties through price boosting methods. A general mood of muckraking and progressivism swept the United States during this period, and it was partly manifested in Ohio through investigations of trusts.

The growing anti-trust sentiment among the people of Ohio and in local government resulted in anti-trust efforts by the state government. Ohio legislators passed anti-trust provisions which made conspiracy in the restraint of trade a crime. The law, known as the Valentine Anti-Trust Act, was tested in court in 1906 by the state attorney general. Attorney General Wade H. Ellis paid close attention to the Brigs vs. Hughes case tried in Sandusky County in the autumn of 1905. Ellis made further investigations of John J. Dun's allegations against bridge companies.¹¹

As a result, Ellis filed criminal charges against American Bridge Company, Penn Bridge Company, Canton Bridge Company, Massillon Bridge Company, Variety Iron Works, King Bridge Company, Brackett Bridge Company, Champion Bridge Company, Adams Brothers Company, Mt. Vernon Bridge Company, Columbus Bridge Company (Huston & Cleveland), Bellefontaine Bridge Company, and Iron Substructure Company on the basis of the Valentine Anti-Trust Act.¹² The case resulted in the ouster of the defendant companies from business in Ohio by the circuit court in Logan County.¹³ Most of the convicted companies continued operations by reorganizing under the laws of other states or making organizational revisions under Ohio laws. Still criminal prosecutions and civil suits continued, and collectively, these weakened the once impregnable

positions of the bridge firms. Although Milwaukee Bridge & Iron was not prosecuted, its operations in Ohio suffered.

In spite of the legal difficulties experienced by Milwaukee Bridge and Iron, the company left a remarkable record of bridge building in Ohio, and Forder Bridge stands as a reminder of the company's years of success. Unfortunately, the bridge has suffered many structural problems, and numerous repairs have been made. Engineers replaced the wood floor with corrugated steel, and steel guardrails were added in 1973. In that year, a 50% load restriction was placed on the bridge.¹⁴ An engineering consultant's report in 1983 suggested that complete repairs be made on the bridge in order to preserve its historical integrity. After a vertical on the south span was hit by an automobile in 1975, it was improperly repaired, causing a dip in the top chord and a rise in the bottom chord. This resulted in an unstable deck and floor joists.¹⁵ By 1985, the suggested repairs had not been made, and a diagonal on the south span had been bent by an ice jam in February 1985. Two horizontal braces were loose and the deck was loose from the stringers on the south span. Rust also plagued the structure.¹⁶

The county engineer is concerned about this historic structure and its preservation. Yet, repairs and maintenance are constant demands on the

county government. The weight limit has been reduced another 20%, to eight tons, and it appears that the bridge will require replacement as repairs become increasingly insufficient.

NOTES

1 Ohio Department of Transportation, The Ohio Historic Bridge Inventory Evaluation and Preservation Plan (Columbus: Ohio Dept. of Transportation, 1983), p. 49.

2 Ohio, County of Paulding, Office of the County Engineer, Forder Bridge Engineering Report (30 July 1973), Bridge Files.

3 Ohio, County of Paulding, Office of the County Engineer, Bridge and Culvert Identification Record, No. 1.

4 Ohio, County of Paulding, Office of the County Engineer, Forder Bridge Engineering Report (30 July 1973), Bridge Files.

5 Ohio, County of Paulding, Board of Commissioners, Commissioners Journal (1889), 5:12, 15, 19, 21.

6 Ohio Historical Society Archives-Library Division, Ohio County Records Manual, rev. ed. (Columbus: Ohio Historical Society, 1983), p. 123.

7 Ohio, County of Paulding, Board of Commissioners, Commissioners Journal (1889), 5:28, 52.

8 "Says Bridge Pool Always Divided the Profits," Columbus Citizen, 10 October 1905, p.5.

9 Eli Woodruff Imberman, "The formative Years of Chicago Bridge & Iron Company" (Ph.D. dissertation, U. of Chicago, 1973), pp. 154-158, 603-605.

10 Champion Bridge Co., Bridge Files, Historic Preservation Office, Ohio Historical Society, Columbus, Ohio.

11 "May Go after Bridge Merger," Columbus Citizen, 7 October 1905, p. 5.

12 Vinton R. Shepard, ed., Ohio Circuit Court Reports (Cincinnati: Ohio Law Reporter Co., 1906), p. 559.

13 "Courthouse Notes," Weekly Examiner (Bellefontaine), 12, 19,
26 October 1906.

14 Ohio, County of Paulding, Office of the County Engineer, No.
6331041 Bridge Inspection Report (30 July 1973), Bridge Files.

15 Ohio, County of Paulding, Office of the County Engineer,
Consultant Report for Crane 3104 (1983), Bridge Files.

16 Ohio, County of Paulding, Office of the County Engineer,
County Report on Forder Bridge (1985), Bridge Files.

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